UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,445	11/21/2006	Katsunobu Kitami	1382-004	9062

22208 7590 11/23/2011

The Marbury Law Group, PLLC
11800 SUNRISE VALLEY DRIVE
SUITE 1000
RESTON, VA 20191

EXAMINER	
SAVAGE, MATTHEW O	
ART UNIT	PAPER NUMBER
1778	

NOTIFICATION DATE	DELIVERY MODE
11/23/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ptonotices@marburylaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/599,445	KITAMI ET AL.	
	Examiner	Art Unit	
	MATTHEW SAVAGE	1778	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-3 and 5-21* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-3 and 5-21* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1-3 and 5-21 are rejected under 35 U.S.C. 103(a) as obvious over Morita et al in view of Kazuki et al.

With respect to claim 1, Morita et al disclose an ultrapure water production plant (see FIG. 2) producing ultrapure water including an ultraviolet oxidation equipment 21 capable of decomposing an organic compound contained in the primary pure water and generating a decomposition product of the organic compound (see lines 19-28 of col. 6 and lines 33-37 of col. 7) and a catalyst mixed tower 29 (see FIG. 9a) located downstream of the ultraviolet oxidation equipment 21 and having catalyst supports each of which has a catalyst carried on a support for removing hydrogen and hydroxyl radicals from the water (see lines 28-32 of col. 7), the catalyst mixed tower also having anion exchange resins which is capable of absorbing and removing decomposition product of the organic compound (see lines 24-28 of col. 6). Morita et al fail to specify a membrane degasser located in the downstream of the catalyst mixed tower. Kazuki et al disclose an analogous system that includes a degasser 15 located downstream of a catalyst unit 14 (see FIG. 1) and teaches that such an arrangement removes gases produced by the UV radiation unit and catalyst unit (see paragraph 27). It would have

been obvious to have modified the system of Morita et al so as to have included a degasser as suggested by Kazuki et al in order to remove gases evolved by the UV radiation unit and the catalyst unit.

With respect to claim 2, Kazuki et al disclose demineralization equipment 16 located in the downstream of the membrane degasser 15 (see FIG. 1 and paragraph 28).

As to claim 3, Morita et al disclose the demineralization equipment 22 as being an ion exchange resin tower including a mixed bed in which the anion exchange resins and cation exchange resins are mixed (see lines 41-42 of col. 10).

With respect to claim 5, Morita et al disclose a ratio of the catalyst supports to the anion exchange resins as being between 3% and 20% by weight and 8% and 13% by weight (e.g., .1-10%, see lines 14-17 of col. 7).

Concerning claim 6, Morita et al discloses a palladium catalyst that is capable of decomposing hydrogen peroxide (see lines 61-62 of col. 6).

As to claim 7, Morita et al disclose the catalyst as being selected from palladium (see lines 61-62 of col. 6).

As to claims 8 and 9, Morita et al disclose the support as being an ion exchange resin in the form of an anion exchange resin (see lines 17-21 of col. 7).

Concerning claim 10, Morita et al disclose that the supports can be in any form including granules (see from line 66 of col. 6 to line 1 of col. 7) and discloses anion exchange resins that are typically in the form of beads which are spherical (e.g., the Dowex 550A anion exchange resin mentioned on line 59 of col. 11).

Regarding claim 11, Morita et al disclose anion exchange resins that are strong base anion exchange resins (e.g., Dowex 550A, see line 59 of col. 11).

As to claim 12, Morita disclose a substrate of the anion exchange resins as being selected from styrene origins (e.g., Dowex 550A).

Concerning claim 13, Morita disclose the substrate of the anion exchange resins as having a structure which is selected from a gel type (e.g., Dowex 550A).

Regarding claim 14, Morita et al disclose the catalyst mixed tower as holding the anion exchange resins and the catalyst supports in a mixed state (see lines 45-47 of col. 7).

As to claim 15, Morita et al disclose the catalyst mixed tower as holding the anion exchange resins and the catalyst supports separately (e.g., in a laminate of layers, see line 47 of col. 7 or elements 22 and 49 in FIG. 9b).

Concerning claim 16, Morita et al disclose the catalyst mixed tower (see FIG. 9b) as being a layered bed type holding a catalyst support layer 49 located on an inflow side of the liquid to be processed and an anion exchange resin layer 22 located on an outflow side of the liquid.

As to claim 17, Morita et al disclose the catalyst mixed tower as further including cation exchange resins (see lines 45-47 of col. 7).

With respect to claim 18, Morita et al and Kazuki et al fail to mention a velocity of 10 to 200 hr^{-1}, however, such a modification would have been obvious in order to optimize the degree of purification of the water for a particular application.

Concerning claim 19, Morita et al disclose a direction of the liquid to be processed as being set to downflow (see FIGS 9a and 9b).

With respect to claim 20, Morita et al and Kazuki et al fail to specify the primary pure water as having a resistivity equal to or greater than 10 MΩcm, a dissolved oxygen concentration of 0 to 1000 μg / L, an organic compounds concentration of 0 to 20 μg/L, and a metal concentration of 0 to 1 μg/L, however, such a modification would have been obvious in order to optimize the efficiency of the ultrapure water production plant for a particular application.

With respect to claim 21, Morita et al disclose the ratio of the catalyst supports to the anion exchange resins as being between 3% and 20% by weight (e.g., the ratio being approximately 12.5% assuming the catalyst supports and anion exchange resin has the same density and 35 L of anion exchange resin is used as per the comparative example in cols. 11-12). Alternatively, modifying the apparatus of Morita et al so as to have included 3-20 wt% catalyst supports would have been obvious in order to optimize the catalyst mixed tower for removing a particular amount of hydrogen peroxide and hydroxyl radicals from the water.

Applicant's arguments filed 9-30-11 have been fully considered but they are not persuasive.

Applicant's argument that Kazuki et al fail to include an anion exchange resin in the catalyst unit is noted, however, such a combination is disclosed by Morita et al (see lines 24-28 of col. 6).

Applicant's argument that FIG. 1 of Kazuki et al includes an anion exchange resin 16 is incorrect since element 16 is a mixed bed type ion exchange unit or demineralization unit containing both anion and cation exchange resins (see paragraph 28).

Applicant's comments concerning FIG. 2 of Kazaki et al are noted but fail to apply as the embodiment shown in FIG. 2 was not relied upon to reject the instant claims.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew O. Savage whose telephone number is (571) 272-1146. The examiner can normally be reached on Monday-Friday, 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew O Savage/
Primary Examiner
Art Unit 1797

mos